

### **ABSTRACT OF THE DISCLOSURE**

A reheat heat exchanger is provided particularly for use in Rankine cycle power generation systems. The reheat heat exchanger includes a high pressure path between a high pressure inlet and a high pressure outlet. The reheat heat exchanger also includes a low pressure path between a low pressure inlet and a low pressure outlet. The two paths are in heat transfer relationship. In a typical power generation system utilizing the reheat heat exchanger, the high pressure inlet is located downstream from a source of high temperature high pressure working fluid. An expander is located downstream from the high pressure outlet and upstream from the low pressure inlet. A second expander is typically provided downstream from the low pressure outlet. The reheat heat exchanger beneficially enhances the efficiency of power generation systems, particularly those which utilize expanders having inlet temperatures limited to below that produced by the source of working fluid.